

What is claimed is:

1 1. A thermokeratoplastic probe that is coupled to a
2 power supply which provides a current to the probe,
3 comprising:

4 a first electrode that has a tip which extends from a
5 first spring member, wherein said tip is placed in contact
6 with the cornea.

1 2. The probe as recited in claim 1, further comprising
2 a second electrode spaced from said first electrode, said
3 second electrode being adapted to be placed in contact with
4 the cornea to provide a return path for the current.

1 3. The probe as recited in claim 2, wherein said second
2 electrode has a disk portion that extends from a second
3 spring member, said disk portion having an aperture that
4 provides a clearance for said tip of said first electrode.

1 4. The probe as recited in claim 3, wherein said disk
2 portion has a concave surface that is placed in contact with
3 the cornea.

1 5. The probe as recited in claim 3, wherein said first
2 spring member has a first spring constant that is greater
3 than twice the value of a second spring constant of said
4 second spring member.

1 6. The probe as recited in claim 1, wherein said tip
2 extends essentially perpendicular to said first spring
3 portion.

14

1 7. The probe as recited in claim 1, wherein said tip
2 has a radius no greater than 50 microns.

1 8. The probe as recited in claim 5, wherein said disk
2 portion has a concave surface that is placed in contact with
3 the cornea.

1 9. The probe as recited in claim 8, wherein said tip
2 extends essentially perpendicular to said first spring
3 portion.

1 10. The probe as recited in claim 9, wherein said tip
2 has a radius no greater than 50 microns.

11. A thermokeratoplastic probe that is coupled to a
power supply which provides a current to the probe,
comprising:

a cage; and,

a plurality of electrodes that extend from said cage and
are adapted to move relative to said cage.

12. The probe as recited in claim 11, further
comprising a plurality of springs that bias said electrodes
into a first position.

13. The probe as recited in claim 11, wherein said cage
includes a pair of rings separated by a plurality of spacers,
said electrodes extend through apertures in said rings.

14. The probe as recited in claim 13, further
comprising a plurality of springs located between said rings
and coupled to said electrodes to bias said electrodes into a
first position.

15. The probe as recited in claim 11, wherein said electrodes are arranged in a circular pattern.

16. The probe as recited in claim 14, wherein said electrodes are arranged in a circular pattern.

1 17. A thermokeratoplastic probe system, comprising:
2 a power supply which can provide a current; and,
3 a first electrode that has a tip which extends from a
4 first spring member, wherein said tip can be placed in
5 contact with the cornea so that current flows through the
6 cornea.

1 18. The probe as recited in claim 17, further
2 comprising a second electrode spaced from said first
3 electrode, said second electrode being adapted to be placed
4 in contact with the cornea to provide a return path for the
5 current.

1 19. The probe as recited in claim 18, wherein said
2 second electrode has a disk portion that extends from a
3 second spring member, said disk portion having an aperture
4 that provides a clearance for said tip of said first
5 electrode.

1 20. The probe as recited in claim 19, wherein said disk
2 portion has a concave surface that is placed in contact with
3 the cornea.

1 21. The probe as recited in claim 19, wherein said
2 first spring member has a first spring constant that is

3 greater than twice the value of a second spring constant of
4 said second spring member.

1 22. The probe as recited in claim 17, wherein said tip
2 extends essentially perpendicular to said first spring
3 portion.

1 23. The probe as recited in claim 17, wherein said tip
2 has a radius no greater than 50 microns.

1 24. The probe as recited in claim 21, wherein said disk
2 portion has a concave surface that is placed in contact with
3 the cornea.

1 25. The probe as recited in claim 24, wherein said tip
2 extends essentially perpendicular to said first spring
3 portion.

1 26. The probe as recited in claim 25, wherein said tip
2 has a radius no greater than 50 microns.

27. A thermokeratoplastic probe system, comprising:
a power supply which can provide a current;
a cage; and,
a plurality of electrodes that extend from said cage and
are adapted to move relative to said cage, said electrodes
being coupled to said power supply.

28. The probe as recited in claim 27, further
comprising a plurality of springs that bias said electrodes
into a first position.

29. The probe as recited in claim 27, wherein said cage includes a pair of rings separated by a plurality of spacers, said electrodes extend through apertures in said rings.

30. The probe as recited in claim 29, further comprising a plurality of springs located between said rings and coupled to said electrodes to bias said electrodes into a first position.

31. The probe as recited in claim 27, wherein said electrodes are arranged in a circular pattern.

32. The probe as recited in claim 30, wherein said electrodes are arranged in a circular pattern.

509
A17
1 33. A method for denaturing tissue, comprising the
2 steps of:

3 a) placing an electrode in contact with the tissue;
4 and,

5 b) sending a current through said electrode and into
6 the tissue for a predetermined time interval so that a local
7 area of the tissue is heated and denatured.

2.
1 ~~34~~. The method as recited in claim ~~33~~¹, further
2 comprising the steps of repeating steps (a) and (b).

3.
1 ~~35~~. The method as recited in claim ~~34~~², wherein the
2 local denatured areas are arranged in a circular pattern
3 about the tissue.

509
A27
1 36. The method as recited in claim 35, wherein said
2 denatured areas are located in a non-visual axis of a cornea.

15

5.
37. The method as recited in claim 36, wherein said
electrode creates a denatured area approximately 1.0
millimeter in diameter.

38. A method for denaturing tissue, comprising the
steps of:
a) providing a probe that is coupled to a power
supply, said probe including;
a first electrode that has a tip which extends from
a first spring member;
a second electrode which has a disk portion that
extends from a second spring member, said disk portion
further having an aperture and is spaced from said tip a
predetermined distance;
b) placing said disk portion on the tissue;
c) deflecting said second spring member until said tip
comes into contact with the tissue; and,
d) sending a current through said first electrode and
into the tissue for a predetermined time interval so that a
local area of the tissue is heated and denatured.

39. The method as recited in claim 38, wherein said
second spring member is further deflected so that said first
spring member is also deflected.

40. The method as recited in claim 38, further
comprising the steps of repeating steps (a) and (b).

41. The method as recited in claim 40, wherein the
local denatured areas are arranged in a circular pattern
about the tissue.

1 42. The method as recited in claim 38, wherein said
2 denatured areas are located in a non-visual axis of a cornea.

1 43. The method as recited in claim 38, wherein said
2 electrode creates a denatured area approximately 1.0
3 millimeter in diameter.

1 44. The method as recited in claim 42, further
2 comprising the step of applying a topical cocaine to the
3 cornea.

1 45. A method for denaturing tissue, comprising the
2 steps of:

3 a) providing a probe that is coupled to a power
4 supply, said probe including;
5 a cage;
6 a plurality of electrodes that extend from said
7 cage and are adapted to move relative to said cage;
8 a plurality of springs that bias said electrodes
9 into a first position;
10 b) placing said electrodes onto the tissue; and,
11 c) sending a current through said first electrode and
12 into the tissue for a predetermined time interval so that a
13 local area of the tissue is heated and denatured.

1 46. The method as recited in claim 45, further
2 comprising the steps of repeating steps (a) and (b).

1 47. The method as recited in claim 45, wherein said
2 electrodes are arranged in a circular pattern.

1 48. The method as recited in claim 45, wherein said
2 denatured areas are located in a non-visual axis of a cornea.

1 49. The method as recited in claim 45, wherein said
2 electrode creates a denatured area approximately 1.0
3 millimeter in diameter.

1 50. The method as recited in claim 48, further
2 comprising the step of applying a topical cocaine to the
3 cornea.